Monthly Oversight Report 58
44728 AES *[46526 RAC]*
ACS NPL Site
Griffith, Indiana
October 1, 2005 – November 4, 2005

BLACK & VEATCH

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Black & Veatch Special Projects Corp.

USEPA/AES
American Chemical Service, Inc. RAO (0057-ROBE-05J7)

BVSPC Project 44728
BVSPC File C.3
November 15, 2005

Mr. Kevin Adler
U.S. Environmental Protection Agency
77 W. Jackson Boulevard (SR-6J)
Chicago, Illinois 60604-3590

Subject: Monthly Oversight Summary Report No. 58 for October 2005

Dear Mr. Adler:

Enclosed is the Monthly Oversight Summary Report No. 58 for October 2005 for the American Chemical Service, Inc. Superfund Site in Griffith, Indiana.

If you have any questions, please call (312-683-7856) or email (campbelllm@bv.com).

Sincerely,

BLACK & VEATCH Special Projects Corp.

Larry M. Campbell, P.E.
Site Manager

Enclosure

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Monthly Oversight Summary Report No. 58
ACS Superfund Site
TO 057, 44728.238 (AES) [WA57, 46526.238 (RAC)]

Reporting Period: Month of October (October 1, 2005 – November 4, 2005)
BVSPC O/S Dates: October 4, 6, 12, 20, 25, and 27 and November 1 and 2 (Messrs. Campbell and Gailey)

Personnel Summary Affiliation	No. of Personnel	Responsibility
Montgomery Watson Harza	3	Respondent's General Contractor
U.S. Environmental Protection Agency	1	Federal Regulatory Agency
Black & Veatch Special Projects Corp.	1	USEPA Oversight Contractor
PSA Environmental	2	Direct Push Technology Contractor
Austgen	1	General Contractor
Ryan	1	Mechanical Contractor
Area Survey	2	Surveyor
Microbac	1	GWTP Sampling Contractor

Construction Activities

Major Activities:

- Montgomery Watson Harza continued operating the groundwater treatment plant, the in-situ soil vapor extraction systems, and the air sparge systems.
- Montgomery Watson Harza and PSA Environmental conducted the post-application sampling of soil and groundwater in the South Area plume following the third full-scale injection of modified Fentons reagent in August.
- Montgomery Watson Harza completed development of extraction well EW2 in the lower aquifer investigation area.
- Montgomery Watson Harza conducted a step pumping test, a 66.5-hour constant rate pumping test, and a 24-hour recovery test of lower aquifer extraction well EW2.
- Area Survey surveyed the locations of the lower aquifer investigation wells.
- Microbac collected samples from the groundwater treatment plant for routine process monitoring.

- Montgomery Watson Harza held an operation and maintenance meeting on October 7.

Activities Performed:

Montgomery Watson Harza (MWH) reported (November 11) that the groundwater treatment plant (GWTP) was operational 98% of the time (30.5 of 31 days) in October, processing 1,150,900 gallons of groundwater at average rates of 25 to 40 gpm. MWH reported that groundwater was pumped to the plant from all trench and well sources through October 31 when the PGCS pumps were shut off in preparation for the lower aquifer pumping test in that area. Effluent from the development of extraction well EW2 and the subsequent step and long-term pumping tests was also processed through the GWTP beginning on October 27 through the end of the reporting period. Microbac collected samples from the GWTP for routine process monitoring.

MWH continued to operate the On-Site Containment Area (ONCA) Still Bottoms Pond Area (SBPA) and Off-Site Containment Area (OFCA) in-situ soil vapor extraction (ISVE) systems and the OFCA and SBPA air sparge systems, processing vapors through thermal oxidizer units 1 and 2 (thermox 1 and 2).

MWH reported that thermox 1 operated for 29 of the 31 days in October, processing 1,000 cfm of vapors from the ONCA SBPA ISVE system, collecting vapors from 23 of the 46 ISVE wells. MWH reported that thermox 1 was shut down on October 8 so MWH could compare natural gas volume usage measured at the thermox 2 meter and the main plant meter. MWH has reported that recent gas quantities at the plant have increased unexplainably.

MWH reported that thermox 2 operated for 28 of the 31 days in October, processing 2,000 cfm of vapors collected from all 42 OFCA ISVE wells and aeration tank T102. MWH reported that thermox 2 was offline for about 3 days for maintenance activities. MWH reported that operation of the GWTP continued while thermox 2 was out of service by routing the vapors from aeration tank T102 through thermox 1. MWH reported that Global personnel were onsite on October 18 to seal five damaged tubes and make other minor repairs to the thermox 2 heat exchanger.

MWH reported that it pumped 29 gallons of product from five ISVE wells in the SBPA on October 10. MWH reported that it used a special pump to remove 23 gallons of the more viscous product from well SVE61 on October 10. The product was manually transferred to the oil holding tank T6 in the GWTP. BVSPC suggested that pumping of product more frequently than monthly might result in larger amounts of product recovery, depending on product inflow rates into the wells.

MWH reported that the planned upgrades to the SBPA ISVE system have been completed. All modifications in the GWTP and the SBPA blower shed have been completed. MWH attempted to startup the SBPA ISVE air injection system on October 20, but found that the friction caps on the tops of the ISVE wells were blown off when the wells were pressurized to 10 psi. MWH ordered and installed higher pressure caps on the wells being converted to air injection wells. MWH measured volatile organic compound (VOC) concentrations as large as 7 ppm in the SBPA ISVE blower shed during air injection testing. MWH found cracks in the piping header system in the blower shed and replaced the damaged sections.

MWH and PSA Environmental mobilized to the site on October 4 to conduct the post application sampling event following the third full-scale in-situ chemical oxidation treatment conducted in August. PSA collected soil cores at selected locations, and MWH personnel collected soil and groundwater samples from the direct push technology (DPT) probes and existing temporary wells for offsite analysis. PSA completed DPT sampling and demobilized from the site on October 6. MWH reported that it completed groundwater sampling from temporary wells on October 7 and demobilized from the site.

MWH reported that it developed lower aquifer extraction well EW2 on October 24 using a Grundfos pump, pumping the extracted water to a Baker tank delivered on October 24 and located near monitoring well MW10C. Water from the Baker tank was then pumped to the GWTP for treatment.

Observed MWH conduct pumping step test of EW2 on October 27. Pumping started at 10 gpm and increased in 10 gpm increments each hour to a maximum pumping rate of 50 gpm, using a 1.5 horsepower (HP) Grundfos pump. Water levels were recorded continually using pressure transducers in EW2, MW53 (10 feet away), OW1 (20 feet away) and LA12 (50 feet away). Water levels were also measured manually in these wells at regular intervals.

MWH reported that it replaced the 1.5 HP Grundfos pump used in the step test with a ¾ HP Grundfos pump to minimize the effluent throttling required to maintain the selected 20 gpm flow rate of the constant rate test, thereby minimizing the back pressure on the pump.

Observed MWH start a long-term constant rate (20 gpm) pumping test at 12 noon on November 1. MWH personnel and EPA TOPO measured water levels in the same wells measured during the step test. Water levels were also recorded continually using pressure transducers in each well. Observed MWH periodically collect VOC samples from the pump effluent piping for offsite analytical testing. MWH reported that it used two staff members onsite during the constant rate test and made water level measurements hourly. MWH reported that it discontinued the constant rate pumping test at 6:30 AM November 4, resulting in a 66.5-hour-long test. MWH reported that it immediately conducted a 24-hour-long recovery test of EW2 that was concluded at 6:30 AM on November 5.

MWH reported that ACS had not reported a recurrence of odors in its break room on the SBPA. MWH reported that ACS production activity has decreased and it has returned to its normal 5-day per week work activity at the site. MWH provided a lunch and presented an orientation regarding MWH activities at the site to approximately 20 ACS personnel on October 31. MWH described its activities at the site and conducted a tour of the GWTP. MWH reported that the ACS personnel were pleased to be informed of MWH's activities at the site.

MWH conducted an operations and maintenance (O&M) meeting at its Chicago office on October 7. BVSPC attended this meeting.

Because of the lack of field activity, weekly reports are not attached. Weekly reports will be prepared in the future if there are sufficient field activities to warrant such reporting. However, correspondence, log book notes and photographs of the daily activities are attached. BVSPC conducted oversight of the field activities on October 4, 6, 12, 20, 25, and 27 and November 1 and 2.

Topics of Concern: None

Concern Resolution: None

Upcoming Activities:

- MWH to continue operating the GWTP and the OFCA and ONCA SBPA ISVE and air sparge systems.
- MWH to complete upgrades to the SBPA ISVE system.
- MWH to monitor odors in the ACS break room.
- MWH to continue pumping product from selected ONCA SBPA dual phase extraction wells.
- MWH will continue weekly construction coordination meetings at the site when field activities warrant such meetings.
- MWH will continue monthly O&M meetings to report on operation of active treatment systems.

Signature: Larry Campbell Date: November 11, 2005

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SITE STATUS MEETING MINUTES
FOR OCTOBER 7, 2005 MEETING
AMERICAN CHEMICAL SERVICE, NPL SITE
GRIFFITH, INDIANA

MEETING DATE: Thursday, October 7, 2005

MEETING TIME: 10:00 a.m.

MEETING LOCATION: MWH Chicago office

ATTENDEES:
Larry Campbell – Black & Veatch
Peter Vagt – MWH
Chris Daly – MWH
David Powers –
Lee Orosz – MWH (via phone)
Amy Clore – MWH (via phone)

TOPICS:

SITE STATUS

General Site Health and Safety
There were no health and safety issues since the last meeting on September 22. The scrubber packing is currently being acid washed over one of the GWTP's sumps. The area is appropriately cordoned off with barricades and caution tape. Workers have been installing components of the SBPA ISVE System Upgrades in the blower shed. The ISVE system blower has been turned off to reduce the noise in the area. Tailgate safety meetings have been performed daily, prior to beginning activities associated with the SBPA ISVE System Upgrades and Chemical Oxidation post-application sampling.

Groundwater Treatment Plant (GWTP) Status
The GWTP ran consistently throughout the month (30 out of 30 days). There were no issues since the last meeting on September 22.

Off-Site Area/SBPA ISVE Systems
There were no issues regarding operation of the ISVE systems since the last meeting on September 22.

MWH will shut down Thermal Oxidizer 1 (ThermOx 1) from October 7 through October 10 to assess natural gas usage and to determine if gas meter readings from the oxidizer and from NIPSCO's main meter coincide. MWH has seen gas usage increase at the site in the past few months and is attempting to determine the reason for the increased usage. Global Technologies has been scheduled to perform repairs to ThermOx 1 on October 18-19. Global Technologies will seal five heat exchanger tubes, fix a door hinge, and repair a hole on the top of the oxidizer.

Thermal Oxidizer 2 (ThermOx 2) was brought offline for approximately five days during September for maintenance activities. The scrubber packing was cleaned, a pH probe was replaced, and quench nozzles were cleaned.

MWH anticipates completion of construction of the system upgrades to the SBPA system by October 11 or 12. Completion of instrumentation and controls remains. Austgen Electric will be on site on October 11 and 12 for this work. Once completed, MWH anticipates that the system will be brought online for system testing on October 12.

Product removal activities from six wells in the SBPA were performed during September. Larry Campbell inquired whether there is a need to increase the frequency of product removal as the volumes of product removed during each event have been sufficiently high. MWH will evaluate the need to increase removal frequency.

Interaction with ACS Facility

The ACS facility had changed their work schedule to seven days a week and recently hired several new personnel in response to increased demand due to recent hurricanes. This period of elevated activity has now ended and the facility's staff is back to normal levels. MWH will coordinate an orientation for the new ACS employees as an introduction to the site operations that MWH performs.

Lower Aquifer Investigation – Phase 2

Well development at the remaining lower aquifer investigation wells (LA-14, LA-15, and OW-1) was completed on Monday, September 26. Groundwater samples were collected from the lower aquifer wells during the week ending September 30.

The pumping test and associated step-test are planned to begin October 25 and will continue through November 4. Development of extraction well EW02 will be performed prior to the execution of the pump test. Extraction wells located in the Perimeter Groundwater Containment System (PGCS) will be shut down beginning September 30, and remain off until completion of the lower aquifer pumping test. Following treatment of pumped water from the lower aquifer test, the PGCS extraction wells will be brought back on-line.

Pumping test procedures are provided in the Lower Aquifer Groundwater Investigation - Phase 1 Report. Relevant portions of Phase 1 Report have been attached to these minutes.

Chemical Oxidation, South Area

Post-application sampling for the third full-scale chemical oxidation application began on October 4 and was completed on October 7. Results are expected in approximately two weeks and will be summarized in a letter report.

Larry Campbell stated that he observed that the driller was not following the appropriate decontamination procedures during the soil sampling event. The driller was using a towel to dry off the rods after cleaning. The towel was being reused even after it had come into contact with potentially contaminated soil. He also stated that appropriate

sampling procedures may not have been followed during sampling of TW-4. There was only two feet of water in the well. As a result, the sample tubing was resting at or near the bottom of the well. During sampling, a slug of sand/silt was observed. Mr. Campbell's observations will be taken into account when data from the location are evaluated.

September Groundwater Monitoring and Residential Well Sampling

The September Groundwater Monitoring and Residential Well Sampling events have been completed. Static water levels in monitoring wells all across the site were measured on September 19. Groundwater sampling began on September 20 and was completed September 27. Results are being made available and will be summarized in a letter report.

Miscellaneous

Larry Campbell pointed out that copies of the QAPP were not immediately available for reference during recent sampling activities. In the future, MWH will ensure that all field personnel have the appropriate documents or know where to find them when needed. These documents have been maintained in the trailer at the site.

LOOK AHEAD

Field Events

- SBPA ISVE System Upgrade Startup – October 11-12
- Lower Aquifer, Phase 2 Event – anticipated schedule:
    - Pumping Test: October 25-November 4
- Chemical Oxidation, Third Full-Scale Event:
    - Post-Application Sampling: October 4-7
- Thermal Oxidizer 1 Repairs – October 18-19

Reports

- Monthly Status Report – October 10, 2005
- Quarterly Report, 2nd Quarter 2005 – October 2005
- Air Intrusion Sampling Report – October 2005

Health & Safety Look Ahead

- Vapor monitoring should be conducted during startup of the SBPA ISVE Upgrades. Readings should be collected inside the blower shed and near the injection wells to ensure that vapors are not escaping from beneath the cover.

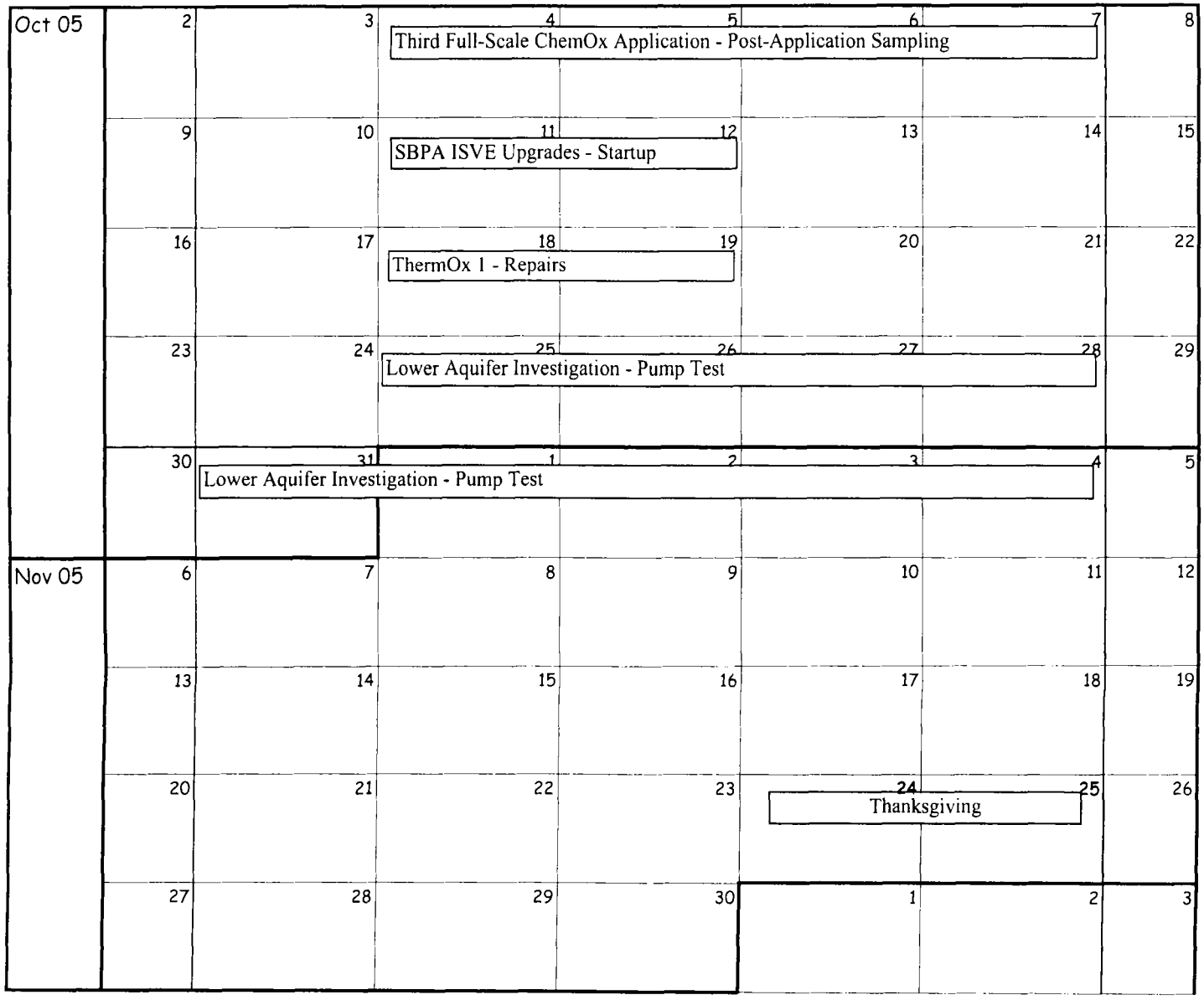
Future Meetings

- Monthly Site Status Meeting – Friday, November 4, 2005, 10 a.m. at MWH Chicago office.

Attachments

- Schedule of Upcoming Field Activities
- Lower Aquifer Groundwater Investigation - Phase 1 Report (Relevant Portions for Pump Test Procedures only)

2005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Third Full-Scale ChemOx Application - Post-Application Sampling
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SBPA ISVE Upgrades - Startup
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ThermOx 1 - Repairs
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Lower Aquifer Investigation - Pump Test
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Lower Aquifer Investigation - Pump Test
Nov 05
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PROPOSAL FOR PHASE 2 SCOPE OF WORK

It is clear from the complications encountered in attempting the Phase 1 scope that it will be difficult to track the benzene impact at MW53 back to an original source. Therefore, the scope will be refined for the second phase to focus in the immediate vicinity of MW53. Monitoring well MW53 has been the only lower aquifer monitoring well at the downgradient edge of the site with detections of benzene. With the existing GWTP currently scheduled to operate for the foreseeable future, MWH has prepared a scope of work below which will identify the extent of the benzene-impacted groundwater near MW53, and optimize a pumping system to capture the impacted groundwater at MW53. This pumping system would transfer the extracted groundwater back to the GWTP for treatment and release to the wetlands in accordance with the discharge permit.

The activities that are proposed include:

- Installing five temporary sampling points
- Installing a new extraction well and pumping system near well MW53,
- Conducting a pumping test, and
- Optimize pumping rates for the pumping system to capture the benzene-impacted groundwater.

Installation of Temporary Sampling Points

An array of five temporary sampling points will be installed with 50 foot spacing to the east and west of MW53 (Figure 8). Each well will be screened to intersect the same depth level as MW53, and the sampling results will be used to determine the width of and concentration of the benzene plume, which has been detected in the samples from MW53. They will be designated TW-01 through TW-05.

These wells will be installed using standard Rotosonic® (sonic) drilling methods to a total depth of approximately 90 feet. Soil samples will be collected continuously using a six-inch outside diameter (OD) sonic casing to determine the top of the clay confining layer, located approximately 12 to 14 feet below ground surface in this area. As these points will be advanced through the clay confining layer, a 7 5/8-inch OD steel override casing will be utilized to seal off the upper aquifer. The override casing will be installed two feet into the clay confining layer. The seal of the override casing will be tested by filling with potable water and measuring drawdown after 15 minutes. The seal will be determined to be adequate if there is less than on inch of drawdown after 15 minutes. If the seal is determined to not be tight, the hole will be abandoned with bentonite grout and attempted again in a different location.

The temporary points will be installed at depths to match the screened interval of MW53, which is screened 76 to 86 feet bgs (546 to 556 feet amsl). The points will be constructed with 2-inch OD schedule 40 polyvinyl chloride (PVC) with ten feet of 0.010-inch (10 slot) factory slotted screen. Filter pack material will consist of 20-40 mesh clean silica sand that

will extend at least one foot above the top of the well screen. A minimum two-foot chipped bentonite seal will be placed directly above the sand. The remaining annular space will consist of 100% bentonite slurry applied via tremie pipe. Upon completion of the well installation, the override casing will be "sonicated" (vibrated) as it is withdrawn to ensure continuity of the bentonite grout to the surrounding formation. The wells will be completed with a locking surface casing.

The new points will be developed no sooner than 24 hours after installation. Development will consist of surging and purging with a disposable bailer to remove large sediment from the well. Once the larger sediment has been removed, development will continue with a submersible pump until ten well volumes have been removed.

At least 24 hours after development, the five newly installed temporary sampling points will be sampled and laboratory analyzed for VOCs. The groundwater samples will be collected using low-flow methods currently used for routine groundwater sampling activities at the site.

All investigation-derived wastes (IDW) will be properly contained and treated. Liquid IDW will consist of decontamination water and purge water, and will be transported back to the treatment plant for treatment. Solid IDW will consist of soil cuttings, and will be incinerated off-site with the solid hazardous waste stream from the GWTP.

Extraction Well and Pumping System Installation

A new well, EW02, will be installed to facilitate the pumping test and serve as an extraction point for the new pumping system. This well will be located 10 feet east of MW53 (Figure 8) and screened to intersect the same interval as MW53. The well will be installed using the Rotosonic methods described above, and will be constructed of four-inch OD schedule 40 PVC risers with ten feet of 0.010-inch (10 slot) stainless steel

screen. The continuously wound stainless steel screen has a greater percent of open area per foot of screen than most factory-slotted PVC screens, which will provide a favorable entrance velocity for groundwater while also keeping sediment from accumulating within the well.

After the pumping test, a pumping system, similar to those at MW56 and MW10C, will be installed at EW02. Extracted groundwater will be piped back to the GWTP for treatment. The necessary parts of the system will be installed at the beginning of the Phase 2 work so that purged water from sampling and the pump test can be collected and routed back to the GWTP. The pumping test will be used to determine the optimum system to capture the benzene impact at MW53. The system will be finished once the Phase 2 activities have been completed and the design parameters for the extraction system have been determined.

Pumping Test

A pumping test will be performed at EW02 to determine the pumping rate needed to capture the benzene-impacted water near MW53. This pumping test would involve a step-test, a constant discharge pumping test, and a recovery test. An observation point will be installed 20 feet south of EW02 (Figure 8) to provide a monitoring point during the pumping test. This observation point (OW1) will be installed using the Rotosonic methods described above, and constructed of 2 inch OD schedule 40 PVC, with ten feet of 10 slot screen installed to intersect the same interval as MW53.

An electric pump capable of pumping at least 20 gallons per minute (gpm) will be used for the test. Since the pumping system to operate in well EW02 after the pumping test will run at a lower pumping rate, higher capacity piping may be used to convey purged water to the GWTP for the duration of the pumping test. Temporary aboveground water storage may also be used to hold purged groundwater for treatment if necessary.

Initially, a step-test will be completed at EW02 to provide general performance characteristics for the lower aquifer in this area. The goal of the step-test is to determine the optimal pumping rate for the long-term pumping test, such that drawdown at EW02 stabilizes, and can be measured at the observation points. The step-test involves monitoring the drawdown of the water level in the pumping well while increasing the pumping rates in steps. Each step will last for 30 minutes. Initially, the pumping rate will be set at two gallons per minute (gpm) and will increase in 2 gpm-increments, until either: 1) the stabilized water level has dropped to half of the original well column, provided drawdown is observed in the farthest observation well, or 2) drawdown does not stabilize in 30 minutes of pumping. If drawdown does not stabilize within 30 minutes at a certain pumping rate, then a slightly lower pumping rate will be used for the pumping test.

Once the pumping rate has been selected, the pumping test will be conducted. This pumping test will pump at a constant rate for 48 to 72 hours. The pumping test will be conducted for at least 48 hours to achieve steady-state conditions. Preliminary plotting of data in the field will be done to determine the actual duration of the pumping test. The drawdown will be measured regularly using pressure transducers at EW02 and three observation points: MW53 (10 feet away), newly installed OW1 (20 feet away), and

TW2 (50 feet away). Manual measurements will also be made every hour to provide backup measurements, and will be made more frequently during the first hour of the pumping test. Manual water level measurements will also be collected periodically from nearby lower aquifer well MW52, and nearby upper aquifer well MW13. Atmospheric pressure measurements will be recorded throughout the test, and the proper compensation will be made to the pressure transducer data for variations in atmospheric pressure. During the pumping test, pH, temperature, conductivity, and turbidity values will be measured from the pumped water and recorded every hour.

A recovery test will be completed following the pumping test. Once the pump has been shut off, measurements will continue to be recorded for approximately 12 hours.

The pumping test and recovery test data will be evaluated to calculate the storativity and trasmissivity of the lower aquifer, and this information will be used to calculate the necessary pumping rate required to capture the benzene plume near MW53.

Calibration of Pumping System

The results of groundwater sampling at TW1 through TW-5 will indicate the width of the benzene detections in the lower part of the lower aquifer. If the pumping test indicates that the benzene plume is too wide to be effectively captured using the pumping system in EW02, then the pumping system may be expanded to include one or more of the temporary sampling points or additional extraction wells may be proposed. If not needed, these temporary points will be properly abandoned in place. When these points are abandoned, the remaining Phase 1 casings will also be abandoned in place. This approach minimizes the number of mobilizations into the wetland area.

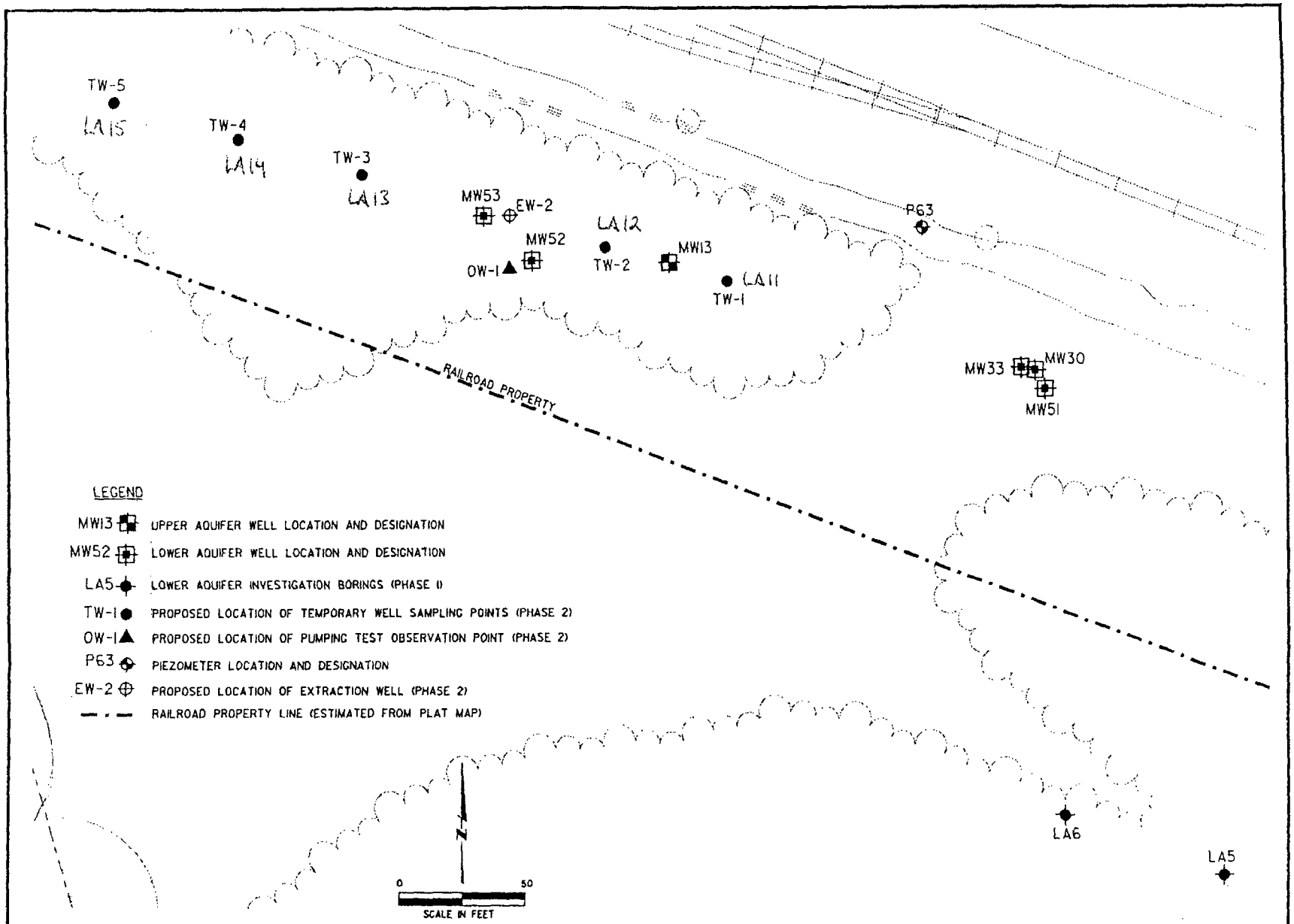
Health and Safety Procedures

MWH will utilize previously submitted health and safety procedures for this second phase of work. The health and safety addenda submitted as part of the Lower Aquifer Work Plan will be used to address the drilling operations. The health and safety addendum submitted with the Long-Term Groundwater Monitoring Plan (LTGWP) will be used to address the collection of groundwater samples and pump test activities.

Reporting

A report will be submitted summarizing the activities and results of Phase 2 of the investigation. If any additional work is required based on the findings of the Phase 2 activities, this will be proposed as part of this report. If no additional investigative work is required, then an operations and maintenance (O&M) plan will be submitted as part of the report. This O&M plan will outline maintenance protocols for the pumping system and monitoring activities to ensure that the system is operating as planned.

If you have any questions or comments on this report, or the proposed second phase of activity, please do not hesitate to contact me.



MWH

AMERICAN CHEMICAL SERVICE, INC.
NPL SITE
GRIFFITH, INDIANA

PROPOSED LOCATIONS FOR SAMPLING AND OBSERVATION POINTS

FIGURE 8

File:\\uscni4s02\Warrenville\Jobs\209\060ACS\022 General GW Remediation\Lower Aquifer Investigation\Drawings\Figure 8_RR.dgn Plot Date: 4-MAY-2005 13:05

Remedial Progress Report	October-05		Report Date: 11/11/2005

GWTP & Dewatering

The GWTP was operational for 30.5 days out of 31 days in October (98%).
Total Gallons treated = 1,150,900 gallons since 9/23/05 (35 days).

Tables, Graphs & Figures
Table - Effluent Summary
Graphs - Off-Site Dewatering
Graphs - SBPA Dewatering

SBPA ISVE System

System was operational 29 out of 31 days in October (94%).
System monitoring was conducted on 10/18/05.
The next monitoring event is scheduled for 11/23/05.

Tables, Graphs & Figures
(Data under validation)

Product Removal	10/10/2005
SVE-52	2 gal.
SVE-53	18 gal.
SVE-62	3 gal.
SVE-72	2 gal.
SVE-88	4 gal.
SVE-61	23 gal.

Active Wells (23 of 46 total)	
SVE-43	SVE-67
SVE-45	SVE-68
SVE-47	SVE-70
SVE-48	SVE-71
SVE-55	SVE-74
SVE-56	SVE-75
SVE-57	SVE-76
SVE-58	SVE-83
SVE-59	SVE-85
SVE-60	SVE-86
SVE-63	SVE-87
SVE-64	

Off-Site ISVE System

System was operational 28 out of 31 days in October (90%).
System monitoring was conducted on 10/18/05.
The next monitoring event is scheduled for 11/23/05.

Tables, Graphs & Figures
(Data under validation)

Active Wells (42 of 42 total)	
SVE-01	SVE-22
SVE-02	SVE-23
SVE-03	SVE-24
SVE-04	SVE-25
SVE-05	SVE-26
SVE-06	SVE-27
SVE-07	SVE-28
SVE-08	SVE-29
SVE-09	SVE-30
SVE-10	SVE-31
SVE-11	SVE-32
SVE-12	SVE-33
SVE-13	SVE-34
SVE-14	SVE-35
SVE-15	SVE-36
SVE-16	SVE-37
SVE-17	SVE-38
SVE-18	SVE-39
SVE-19	SVE-40
SVE-20	SVE-41
SVE-21	SVE-42

Comments

Data presented here is for informational purposes only. Not all data presented in this report has been validated.

Table
Summary of Effluent Analytical Results
Groundwater Treatment System
American Chemical Service NPL Site
Griffith, Indiana

Event Date	Month 98 7/12/2005	Month 99 8/15/2005	Month 100 9/13/2005	Effluent Limits	Lab Reporting Limits
pH	7.17 /J	7.66 /J	7.55 /J	6-9	none
TSS	6.00	NS	NS	30	10
BOD	< 2 / UJ	NS	NS	30	2
Arsenic	6.3 B/	NS	NS	50	3.4
Beryllium	ND	NS	NS	NE	0.2
Cadmium	ND	NS	NS	4.1	0.3
Manganese	9.4 B/UB	NS	NS	NE	10
Mercury	ND	NS	NS	0.02 (w/DL = 0.64)	0.64
Selenium	ND	NS	NS	8.2	4.3
Thallium	ND	NS	NS	NE	5.7
Zinc	ND	NS	NS	411	1.2
Benzene	0.50 U/	0.50 U/	0.50 U/UJ	5	0.5
Acetone	2.5 U/	2.5 U/UJ	2.5 U/UJ	6,800	3
2-Butanone	2.5 U/	2.5 U/UJ	2.5 U/UJ	210	3
Chloromethane	0.3 J/ J	0.50 U/UJ	0.50 U/UJ	NE	0.5
1,4-Dichlorobenzene	0.50 U/	0.50 U/	0.50 U/UJ	NE	0.5
1,1-Dichloroethane	0.50 U/	0.50 U/	0.50 U/UJ	NE	0.5
cis-1,2-Dichloroethene	0.50 U/	0.50 U/	0.50 U/UJ	70	0.5
Ethylbenzene	0.50 U/	0.50 U/	0.50 U/UJ	34	0.5
Methylene chloride	0.50 U/	0.50 U/	0.44 J/J	5	0.6
Tetrachloroethene	0.50 U/	0.50 U/	0.50 U/UJ	5	0.5
Trichloroethene	0.50 U/	0.50 U/	0.50 U/UJ	5	0.5
Vinyl chloride	0.50 U/	0.50 U/	0.50 U/UJ	2	0.5
4-Methyl-2-pentanone	ND /UJ	2.5 U/UJ	2.5 U/UJ	15	3
bis (2-Chloroethyl) ether	ND	NS	NS	9.6	9.6
bis(2-Ethylhexyl) - phthalate	ND	NS	NS	6	6
4 - Methylphenol	ND	NS	NS	34	10
Isophorone	ND	NS	NS	50	10
Pentachlorophenol	ND	NS	NS	1	1
PCB/Aroclor-1016	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.5
PCB/Aroclor-1221	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.92*
PCB/Aroclor-1232	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.5
PCB/Aroclor-1242	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.5
PCB/Aroclor-1248	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.5
PCB/Aroclor-1254	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.5
PCB/Aroclor-1260	ND	NS	NS	0.00056 (w/DL = 0.1 to 0.9)	0.5

Notes:

Bolded result indicates a exceedence of the discharge limit
pH data is expressed in S.U.
Metals, VOC, SVOC and PCB data is expressed in ug/L
ND = Not detected
NS = This analyte was not sampled or analyzed for
NE = No effluent limit established.
DL = Detection limit
* = Approved SW-846 method is incapable of achieving effluent limit.

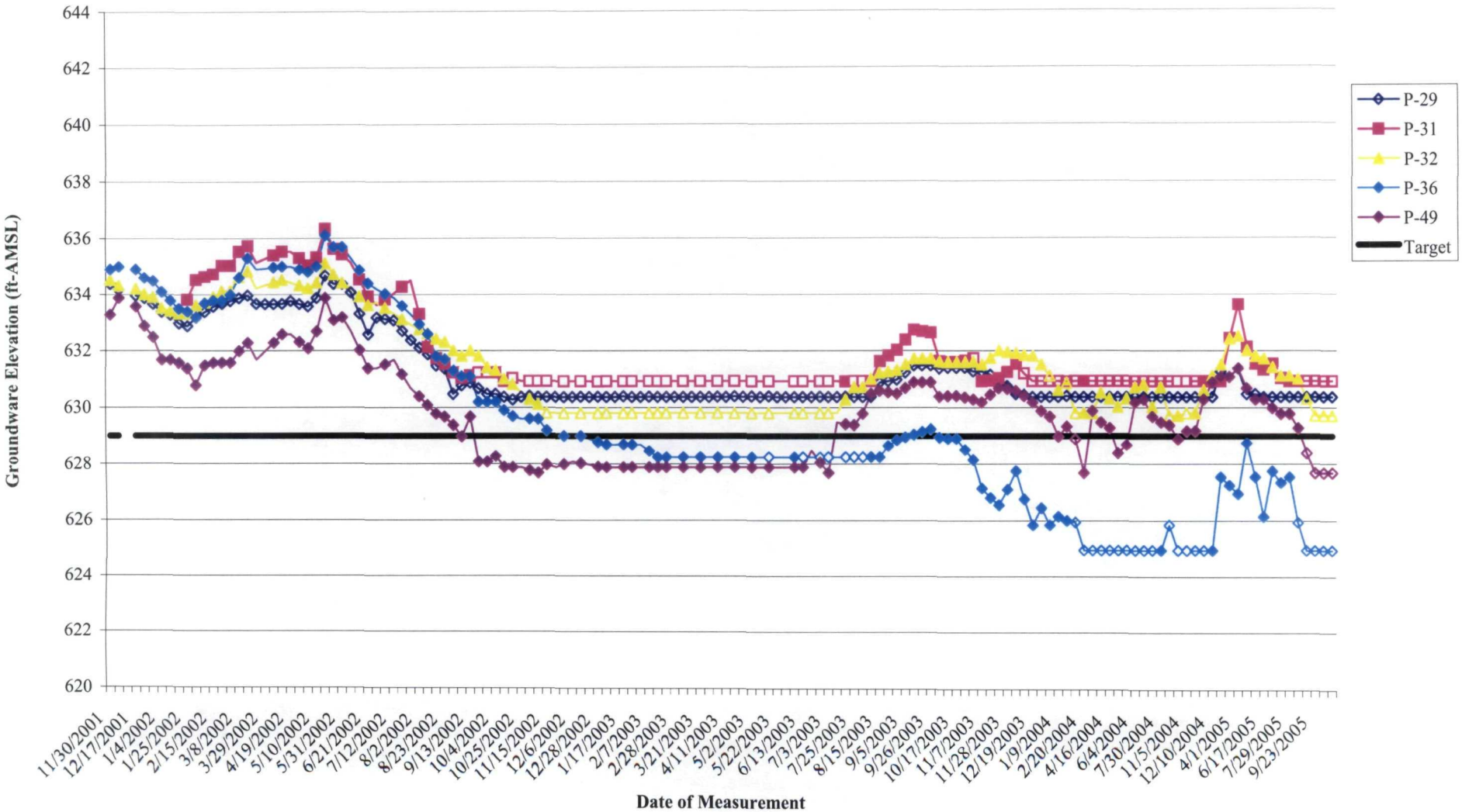
DRAFT VERSION
For Informational Purposes Only

Not all data presented here has been validated
Notes and suffix definitions have not been updated.

Suffix Definitions:

_/ = Data qualifier added by laboratory
/_ = Data qualifier added by data validator
J = Result is estimated
B = Compound is also detected in the blank
UJ = Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value
JB = Result is detected below the reporting limit and is an estimated concentration. The compound is also detected in the method blank resulting in a potential high bias
UB = Compound or analyte is not detected at or above the indicated concentration due to blank contamination
UBJ = Analyte is not detected at or above the indicated concentration due to blank contamination, however the calibration was out of range. Therefore the concentration is estimated.

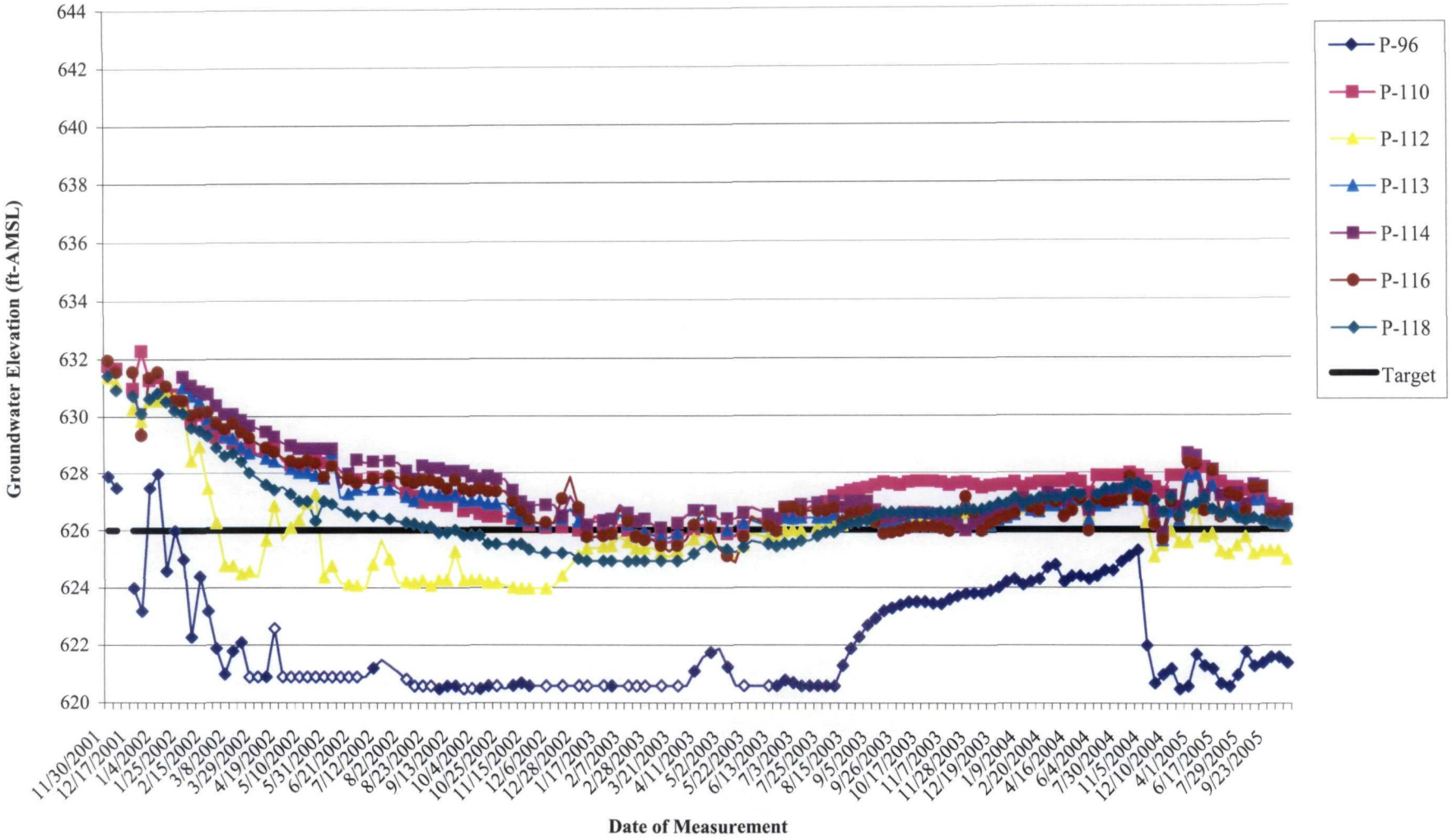
Figure 1
SBPA Water Level Status
ACS NPL Site
Griffith, Indiana



Note:
Hollow points represent dry piezometers (data used for graphing purposes only).
The bottom elevation of the piezometers may vary due to silting of the well or removal of silt.

ALC/jmf/CAD
J:/209/0603/0301/BWES Data/SBPA and Off-Site Water Levels

Figure 3
Off-Site Water Level Status - Piezometers
Groundwater Monitoring
ACS NPL Site
Griffith, Indiana



Note:
Hollow points represent dry piezometers
(data used for graphing purposes only). The bottom elevation of the piezometers may vary due to silting

ALC/jmf
J:/209/0603/0301/BWES and Dewatering Data/SBPA and Off-Site Water Levels.xls/Off-Site Chart

4Oct05 Tue

0900 Arrive Onsite
Clear humid warm 80°F
Personnel Onsite
Lee Orosz MWH
Mark Zulawinski Austgen Elect
Amy Clare MWH
Justin Finger "
Terry Frisk Ryan
Robt. Tremen PSA Envl.
Aaron Butler " "
Tim Kirkland Austgen
Larry Campbell BVSPC
Robert Cop Austgen

Robert Crockston - Micro-bac

0930 Disc w/ Lee re activities at site.
Two Companies (CRA & TRC) visited the site last week to assess opns of site remediation processes, possibly for purpose of submitting bid to replace MWH as O&M contractor
1000 Visited Colfax Ave drilling site where MWH + PSA is performing Groundwater & soil sampling for Post Chem ox Sampling. Amy indicated lab had not sent VOC soil sampling equip. So will focus on groundwater today.

1015 Photo 79-6 looking S at MWH ~~Sampling~~ purging groundwater at DL 10.
1034 Photo 79-7 looking S at MWH collecting VOC sample from DL 10
1042 Photo 79-8 looking SW @ PSA removing sampling tube from DL-10
1045 Photo 79-9 looking SW at PSA removing drill rod from DL 10
1100 PSA relocates 5 ft DL02 and advances rods. MWH begins purging well
1215-1315 Break for Lunch
1400 MWH reports problem w/ PSA DPT rig
1455 Photo 79-10 looking SW at PSA backfilling DL02 hole w/ Bentonite pellets
1500 PSA relocated to DL 01 & started probe.
1505 Left site for day

LM Campbell

6 OCT 05 Thur

0925 Arrive onsite
Cloudy Cool Calm 55°F
Personnel Onsite

Justin Finger	MWH
Robert Tieman	PSA Envl
Aaron Butler	" "
Amy Clare	MWH
Tim Kirkland	Austgen
Lee Orosz	MWH
Mike Chennelle	Microbac
Larry Campbell	BRSPC

0930 MWH + PSA taking soil samples at FS-3-02 then started collecting water samples were getting PID hits in soil
1029 Photo 79-11 looking NE at MWH collecting GW sample from FS3-02
1036 Photo 79-12 looking N at PSA removing probe steel from FS3-02
1053 Photo 79-13 looking N at MWH examining soil sample from FS3-08
1200-1300 Lunch
PSA finished soil sampling & demobilized ≈ noon

LM Campbell

1415 Photo 79-14 looking W of MW11 ~~Sampling~~ Purging ORC-PZ 105

1445 Photo 79-15 looking W at MW11 Collecting GW Sample at ORC-PZ-105

1500 MW11 completed sampling at ORC PZ105 & returned to TW04

1515 MW11 encountered only 2' water in well TW04. Attempting to purge & then sample

1520 Discussed w/ Army & Justin need to sample at low flow conditions per QAPP & Sparger Sampling Procedures (≤ 200 mL/min) Also discussed need to revise decon procedures of PSA Envl. because PSA wiped DI water from decontam equipment after decontam. Equip should not be wiped - only air dried

1606 Photo 79-16 looking W at MW11 purging TW04 & preparing to sample

1630 Left site for day

JM Campbell

07 OCT 08 Friday

1000 Monthly O&M Mtg at MW11 Chicago Office
Personnel Attending
- Lee Oresz & Army Alore via phone from site
- Pete Vogt, Chris Daly, Dave Powers (MW11) - Office
- Larry Campbell - BWSC - Mike

H&Safety - No incidents since last mtg. Have held daily tailgate mtgs w/ subcontractors. HCS staff back to pre-Katrina crew size but are adding new product line (furniture coating)

GWTP - Running well - will 30 days on September will shut down.
- currently cleaning Thermoxz Scrubber packing w/ muriatic acid in drums in GWTP near sump.

ISVE Systems - running well
SBBA - Operated all 30 days per days.
OFCA - Thermoxz down 5.5 days - 2 day to remove packing from Scrubber

JM Campbell

2dy when probe sensor broken
4dy when quench nozzle plugged.

SVE Upgrade

MWH has completed 99% of physical work in SBPA blower shed. Expect to add controls next week & will start up, but won't continue because Arc will be offsite for 2 weeks

Interacting Community -

MWH notified ACS that SBPA VSVE ~~shall not~~ modifications will start ops soon (inject air)

Lower Aquifer Investigation

MWH completed developed remaining lower aq/fer wells. These 24 wells were sampled on 29 & 30 Sept. MWH will develop EW2 & perform Step Test + then pump test in late Oct & early Nov.

Chem OX Sampling

MWH & PSA Envl. Conducted Post Application Sampling this wk Soil samples 4-6 Oct + PSA demobilized. MWH continue

Jm Dempsey

Well Temp well sampling thurs 7 Oct.

SBPA Product Recy

Campbell asked about rate & product recovery in 5 SBPA wells & suggested more frequent pumping might expedite the remediation. MWH agreed to conduct more frequent pumping & product.

Luzerne Church

- MWH will shut down Thermax 1 over weekend to check natural gas usage in Thermax 2 + compare w/ billing meter
- SBPA VSVE upgrades to be completed next week, including programming controls. Expect to startup by 12 October
- 18 Oct Global/MWH to repair Thermax 2 heat exchanger
- 25-28 Oct Develope EW02 & perform Step test
- 1 Nov perform Pumping Test EW02 (shut down PGBS during pump test)

Next Mtg 4 Nov @ MWH office
1030 Mtg over

Jm Dempsey

(84)

12 OCT 05 Wed

0845 Arrive onsite
Overcast, drizzle, cool, 66°F

0930 Photo 79-17 looking S at new 4"ϕ SS air pipe

0931 Photo 79-18 looking SW at new 4"ϕ SS pipe connection to spare 8"ϕ HDPE TO SBPA blower shed

0140 Photo 79-19 looking SW at 8"ϕ HDPE air in SBPA blower shed. - Converted to 4"ϕ # PVC

0941 Photo 79-20 looking SE at new 4"ϕ pvc air supply piping & hoses to individual well ducts

0942 Photo 79-21 looking W into SBPA blower shed showing new air supply piping

0946 Photo 79-22 looking E showing new elect. panel for pumping test.

Jim Campbell

(85)

0950 Discussion w/ Lee. All piping connections have been made at both GWTP & blower shed. Currently pressure testing piping looking for leaks.
Assigned to install electrical connections so can control valves electronically from GWTP.
Need to load programming into computer control system.
Expect to be complete by Friday or Thursday. Will start up air sparging system on Friday (Lee OK on Thursday)
Plan to inject air into 2-3 wells at a time & observe results in SVE extraction wells. Then test another group of 2-3 air injection wells
— Lee Mendonca MWH will conduct briefing of ACS personnel on Monday Oct 31. - will provide lunch & tour of GWTP

1005 Left site for day

Jim Campbell

20 OCT 05 Thur

0900 Arrive Onsite, Sprinkles at times
Overcast, Calm, Cool 52°F
Personnel Onsite
Lee Orosz MWH
Chris Daly "
Larry Campbell BVSPC
Robert Coy Ausky??
Waste Chemicals Mechanical

0915 Disc. w/ Lee Orosz –
reported that Global was
onsite Tuesday 10/18/05 to
repair heat exchanger tubes
on thermox 2. Completed all
work in one long day

0925 Disc w/ Lee & Chris Daly
Started injecting air into
newly converted ISVE wells
in SBPA. At 10 PSI, found
they were blowing caps off of
ISVE injection wells

0930 Photo 80-01 looking SW at
Chris Daly adjusting main
air valve to reduce pressure
going to SBPA ISVE System

0942 Photo 80-02 looking SW at
SBPA ISVE well 59 w/ cap blown

LM Campbell

off of ~~air~~ line injection air escaping
thru top of well – rather than into
subsurface formation.

0956 Photo 80-03 looking down at
Catch basin on N. Side of SBPA Cap
Note Crack in Concrete.

1008 MWH Reported getting PID hits
of 6-7 ppm in SBPA ISVE blower shed
Photo 80-04 looking W showing
fan used to aerate blower shed
to remove vapors

1015 MWH Measured organic vapor levels
at 3-4ppm after ventilating shed.
Turned on air flow to 6 SVE wells
& blew caps off well. May need
tighter caps on wells. Currently
plan to lower pressure to wells
& continue testing

1100 MWH installed new expansion cap
on well SVE44 & applied 3 psi
pressure. Cap rated at 6 psi & held

1145 Left Site for Day

LM Campbell

(E8)

25 Oct 05 Tues

0800 Arrive Onsite
Partly Cloudy, Showers earlier
Cold 57°F

Personnel Onsite

Lee Crosz	Mwh
Terry Frisk	Ryan
Justin Finger	Mwh
David Powers	Mwh
Gary Bonaguidi	Area Survey
Matthew Hensle	" "
Mike Bristley	Austgen
Larry Campbell	IBUSPE

0905 Lee Stated that SBTA issue Modification Testing could resume on Thursday after required parts are delivered - Lee reported that Baker Tank was delivered yesterday and locked in woods near pump Test locations

0932 Photo 80-05 from looking SE at discharge hose set up to discharge to equalization tank

Jrn Campbell

(E9)

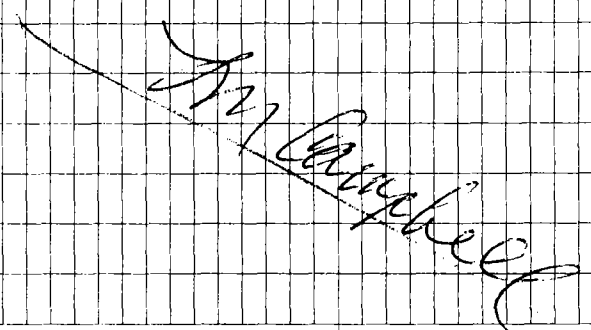
0932 Photo 80-06 from looking North at hose being laid along drive

1002 Photo 80-07 from looking N-E Mwh personnel on Baker Tank Making connections for discharge Water from pump tests

1016 Photo 80-08 from looking West Survey personnel surveying locations of LA wells

1020 Disc w/ Dave Powers. Will spend today laying hoses etc to set up for well development Will probably start well development on Wednesday & start Step test on Thursday Extended pump test scheduled for next Tuesday - Friday

1033 left site for day



(90)

27 OCT 05 (Thur)

1315 Arrive onsite
Overcast, Showers earlier
Calm, cold 50°F

Personnel Onsite
Lee Orosz MWH
Justin Finger "
David Powers "
Chad Gailey BUSR
Larry Campbell "

1337 Visit LA Pump test
MWH started Step Test
at 1330. Started at 10 gpm
Now at 30 gpm

1338 Photo 80-~~08~~ 10 frame looking
E at MWH taking Water
level readings at LA EW02

1430 Photo 80-~~09~~ 10 frame looking E at
MWH adjusting exhaust valve
to increase flow to 40 gpm

1434 Photo 80-~~10~~ 11 frame looking E at
MWH employee running to TW
to make W.L. reading

M Campbell

(91)

1540 Photo 80-~~11~~ 12 frame looking NW showing
MWH staff measuring WL at
well for LA Step Test at 50 gpm.

1622 Photo 80-~~12~~ 13 frame looking NW showing
MWH collecting WL during
recovery

1640 Photo 80-~~13~~ 14 frame looking E at
Baker tank showing 4600 gal
purged in development &
Step test

1645 Left Site for Day

M Campbell

1 NOV 05

0855 Arrive Onsite
Clear, Calm, Cold 52°F
Personnel Onsite
Lee Orosz MWH
Justin Finger "
David Powers "
Chad Smith "
Larry Campbell BVSR
Kevin Adler EPA
Pete Vogt MWH

0900 Disc w/ Lee. Reported MWH hosted the AES staff yesterday to a briefing of the GWTP. 18 AES personnel attended. MWH also provided lunch

0905 Disc w/ Lee re pump test. MWH removed the 1.5 HP pump used during step test & replaced it w/ 3/4 HP pump for long-term pump test

0915 MWH team making final preparations for pump test

1035 Photo 80-~~14~~ 15 fmu looking SW at Dave Powers programming PC

LM Campbell

regarding frequency of data recordings of pressure transducers during conduct of pump test

1119 Photo 80-~~15~~ 16 fmu looking NW at EW02 Setup where Lee was conducting safety briefing

1200 Photo 80-~~16~~ 17 fmu looking NE at Dave Powers throwing switch to start pump test

1201 Photo 80-~~17~~ 18 fmu looking NW at Kevin Adler measuring WL at OW1 Note Pete Vogt measuring WL at MW53

1205 Photo 80-~~18~~ 19 fmu looking W at Pete Vogt measuring WL @ MW53

1206 Photo 80-~~19~~ 20 fmu looking S at Chad Smith measuring WL at EW02. Note Dave monitoring flow meter

1208 Photo 80-~~20~~ 21 fmu looking down at flow meter showing 20.07 gpm

1215 Photo 80-~~21~~ 22 fmu looking N at MWH checking conductivity of sampled water

1232 Photo 80-~~22~~ 23 fmu looking E at pump test setup. Crew resting between readings

LM Campbell

(94)

1300 Photo 80-24 from looking NW at Dave collecting VOC sample from pump test discharge

1310 Went continued WL measurements at ½ hr intervals thru 1400

1405 Break for lunch

1525 Photo 80-25 from looking W at Lee installing new 150 psi pressure cap on ISVE well 51

1526 Photo 80-26 from looking W at newly installed well cap

1530 Photo 80-27 from looking SE at MW4 tightening new cap on ISVE 44

1600 Photo 81-01 looking W at Dave taking hourly WL reading @ MW 53.

1604 Photo 81-02 looking N at Dave measuring WL in MW 57

1630 Left site for Day

Jim Campbell

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #6
Date: 10-04-05 Time: 1015
Photographer: Larry Campbell
Description: Photo facing south showing MWH purging groundwater at DL10 as part of the soil and groundwater sampling after the 3rd post-application chem-ox injections.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #7
Date: 10-04-05 Time: 1034
Photographer: Larry Campbell
Description: Photo facing south showing MWH collecting VOC groundwater sample from DL10 on west side of Colfax Ave.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #8
Date: 10-04-05 Time: 1042
Photographer: Larry Campbell
Description: Photo facing southwest showing PSA Environmental removing sampling tubing from DL10.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #9
Date: 10-04-05 Time: 1045
Photographer: Larry Campbell
Description: Photo facing south showing PSA Environmental removing drill rod from DL10 after sampling.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #10
Date: 10-04-05 Time: 1455
Photographer: Larry Campbell
Description: Photo facing southwest showing PSA Environmental backfilling DL02 probe hole with bentonite pellets.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #11
Date: 10-06-05 Time: 0930
Photographer: Larry Campbell
Description: Photo facing northeast showing MWH collecting groundwater sample from FS3-02.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #12
Date: 10-06-05 Time: 1036
Photographer: Larry Campbell
Description: Photo facing north showing PSA Environmental removing drill rod from FS3-02 on east side of Colfax Ave.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #13
Date: 10-06-05 Time: 1053
Photographer: Larry Campbell
Description: Photo facing north showing MWH examining soil sample from FS3-08 on east side of Colfax Ave.

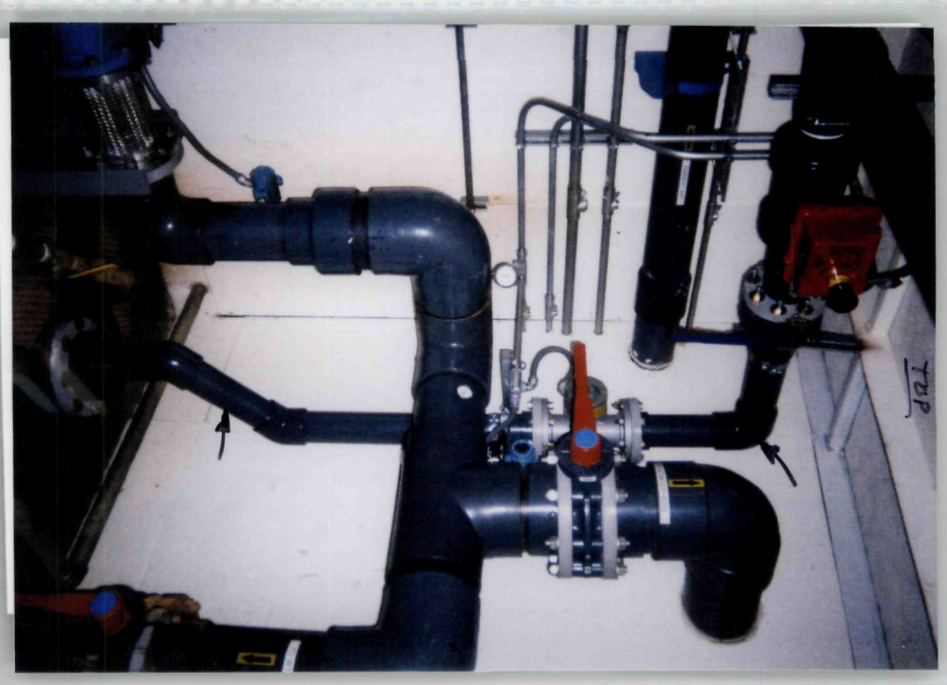
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #14
Date: 10-06-05 Time: 1415
Photographer: Larry Campbell
Description: Photo facing west showing MWH purging well ORC-PZ-105 in yard at 1002 Reder Road.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #15
Date: 10-06-05 Time: 1445
Photographer: Larry Campbell
Description: Photo facing west showing MWH collecting groundwater sample in 1 L bottle from ORC-PZ-105.

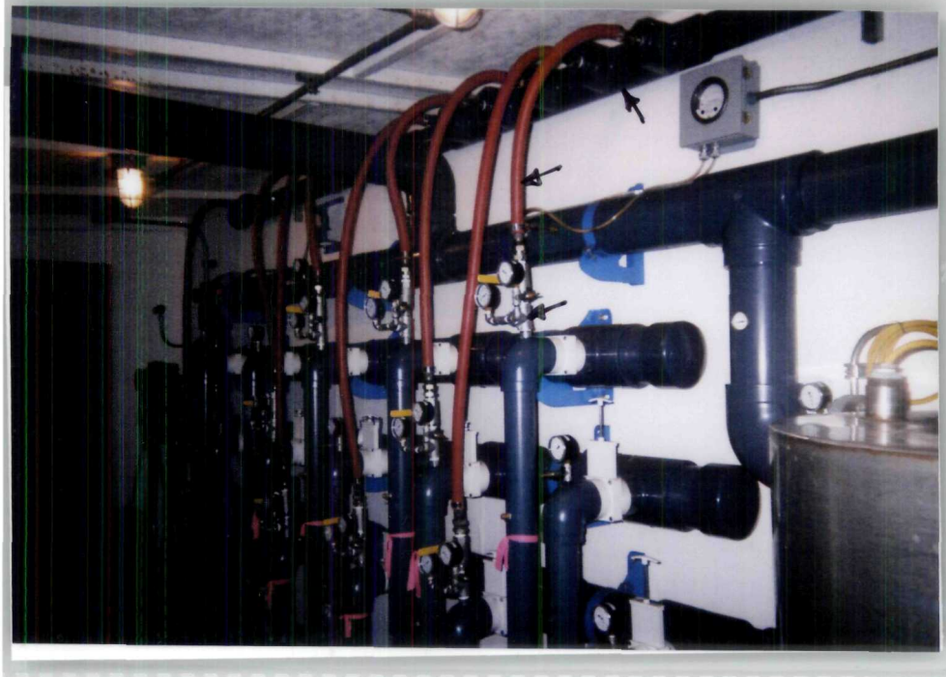
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #16
Date: 10-06-05 Time: 1606
Photographer: Larry Campbell
Description: Photo facing west showing MWH purging well TW04 and preparing to sample groundwater.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #17
Date: 10-12-05 Time: 0930
Photographer: Larry Campbell
Description: Photo facing south showing new 4" dia. stainless steel pipe (arrows) added to existing air header to provide injection air for the SBPA ISVE system upgrade.

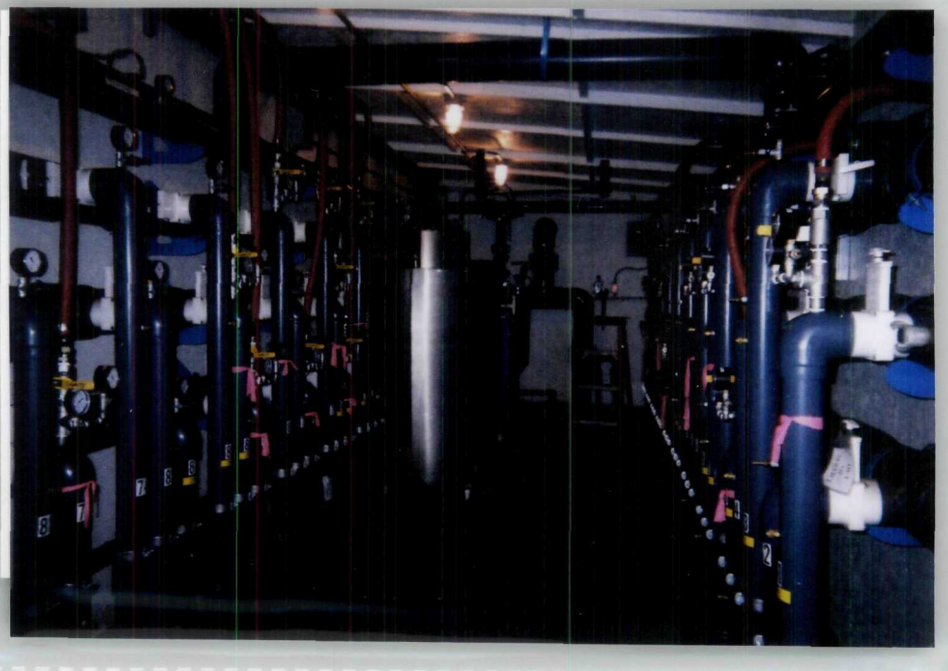
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #18
Date: 10-12-05 Time: 0931
Photographer: Larry Campbell
Description: Photo facing southwest showing new 4" dia. stainless steel pipe (arrow) connection to existing 8" dia. HDPE pipe (in GWTP) going to SBPA ISVE blower shed.



Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #19
Date: 10-12-05 Time: 0940
Photographer: Larry Campbell
Description: Photo facing southwest showing new 4" dia. PVC piping (arrows) connected to existing 8" dia. HDPE piping in SBPA blower shed.



Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #20
Date: 10-12-05 Time: 0941
Photographer: Larry Campbell
Description: Photo facing southeast showing new 4" dia. PVC air supply and flexible hoses (arrows) connected to individual well piping.



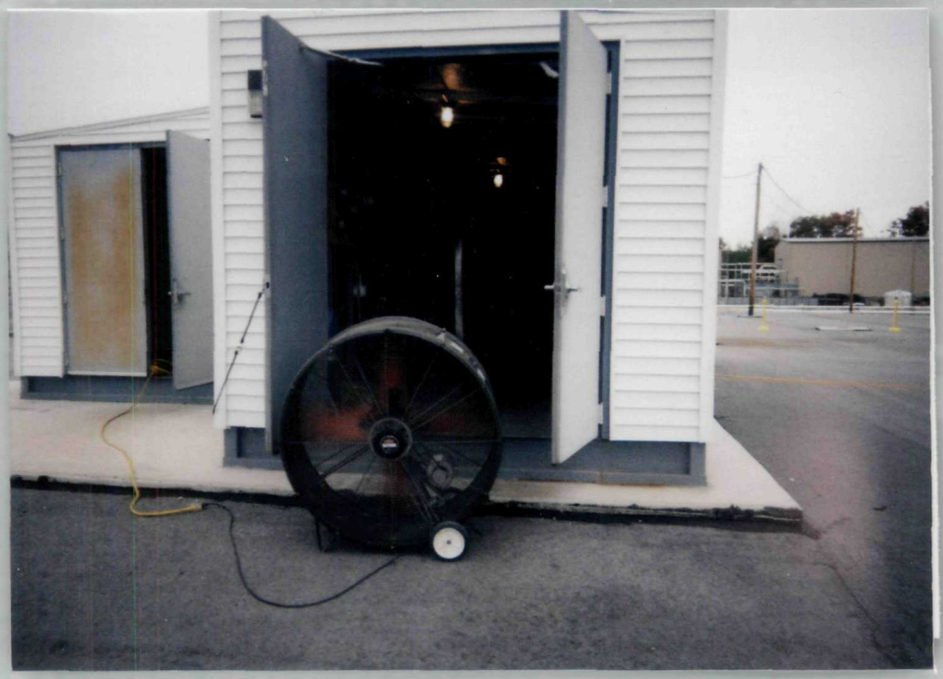
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #21
Date: 10-12-05 Time: 0942
Photographer: Larry Campbell
Description: Photo facing west showing interior of SBPA blower shed. Pipes with pink ribbon are being converted to air injection wells.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 79 Photo #22
Date: 10-12-05 Time: 0946
Photographer: Larry Campbell
Description: Photo facing east showing new electrical panel adjacent to lower aquifer pump test well EW02.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #1
Date: 10-20-05 Time: 0930
Photographer: Larry Campbell
Description: Photo facing southwest showing Chris Daly adjusting main air valve to reduce pressure going to SBPA ISVE air injection system.

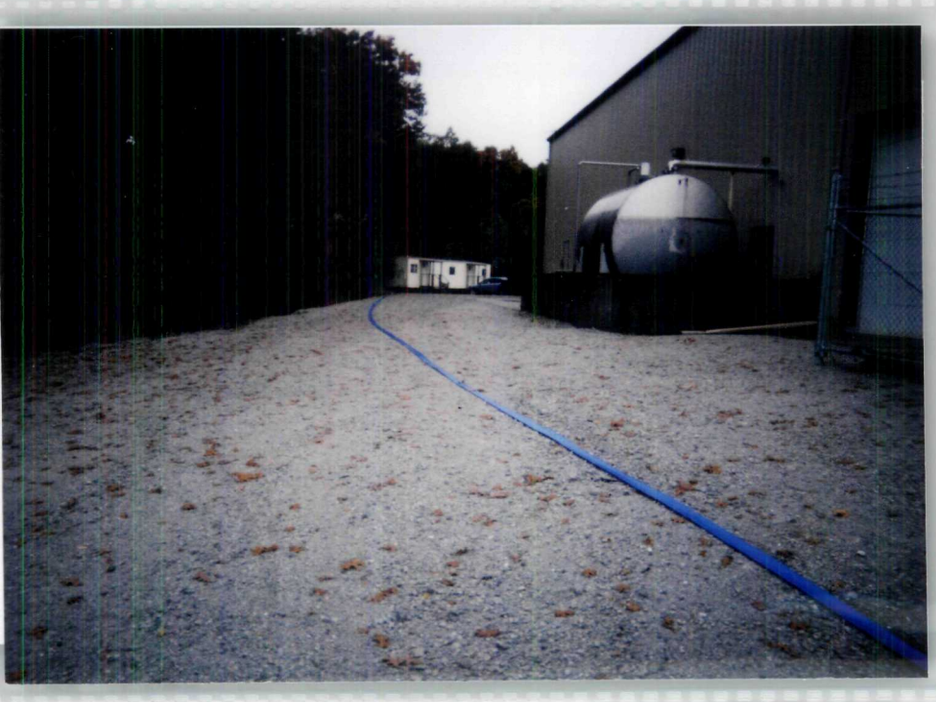
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #2
Date: 10-20-05 Time: 0942
Photographer: Larry Campbell
Description: Photo facing southwest showing SBPA ISVE well 59 with friction cap blown off. Injection air is escaping through top of well rather than into subsurface formation.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #3
Date: 10-20-05 Time: 0956
Photographer: Larry Campbell
Description: Photo facing down showing catch basin on north side of SBPA cap. Note crack in concrete near pencil.



Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #4
Date: 10-20-05 Time: 1008
Photographer: Larry Campbell
Description: Photo facing west showing fan used to ventilate ISVE blower shed to remove VOCs detected inside.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #5
Date: 10-25-05 Time: 0930
Photographer: Larry Campbell
Description: Photo facing southeast showing discharge hose set up to discharge pump test water to equalization tank for treatment.



Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #6
Date: 10-25-05 Time: 0932
Photographer: Larry Campbell
Description: Photo facing north showing pump test discharge hose on gravel drive west of the GWTP.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #7
Date: 10-25-05 Time: 1002
Photographer: Larry Campbell
Description: Photo facing north showing MWH personnel on Baker tank making connection for discharge of stored water from the lower aquifer pumping tests

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #8
Date: 10-25-05 Time: 1016
Photographer: Larry Campbell
Description: Photo facing west showing Area Survey personnel surveying location and elevation of lower aquifer wells.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #9
Date: 10-27-05 Time: 1338
Photographer: Larry Campbell
Description: Photo facing east showing MWH taking water level readings at LA EW02 prior to the step pumping test.

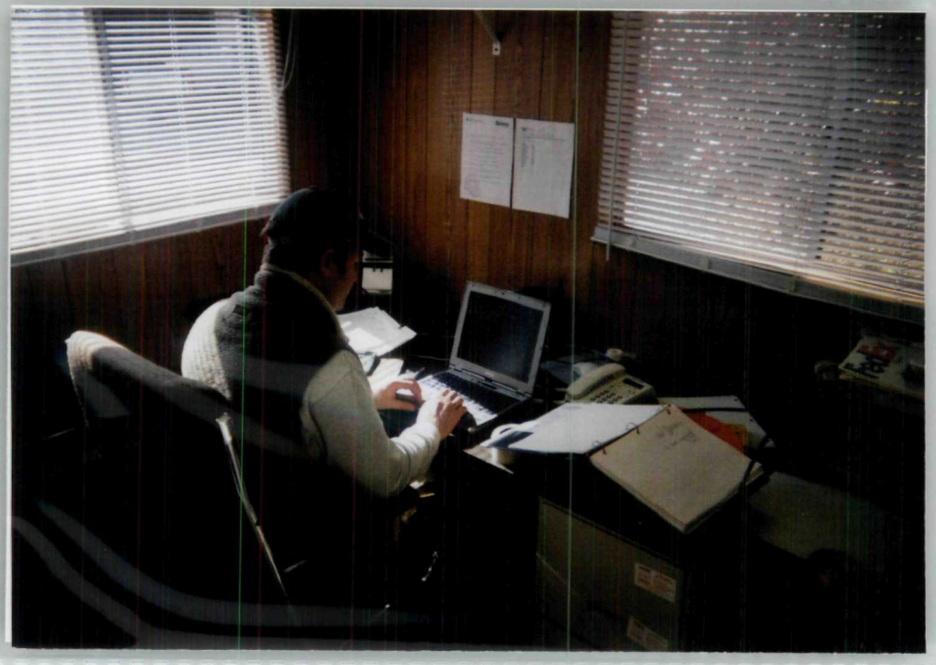
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #10
Date: 10-27-05 Time: 1430
Photographer: Larry Campbell
Description: Photo facing east showing MWH personnel adjusting discharge valve to increase discharge from 30 to 40 gpm.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #11
Date: 10-27-05 Time: 1434
Photographer: Larry Campbell
Description: Photo facing east showing MWH personnel running to LA12 to measure water level during lower aquifer step pumping test.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #12
Date: 10-27-05 Time: 1540
Photographer: Larry Campbell
Description: Photo facing northwest showing MWH staff measuring water level at EW02 and OW01 for lower aquifer step pumping test, pumping at 50 gpm.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #13
Date: 10-27-05 Time: 1620
Photographer: Larry Campbell
Description: Photo facing northwest showing MWH staff recording water levels during recover test following conclusion of step pumping test

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #14
Date: 10-27-05 Time: 1640
Photographer: Larry Campbell
Description: Photo facing east showing gage on Baker tank indicating 4,600 gallons of water from development and step pump test from EW02.



Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #15
Date: 11-01-05 Time: 1035
Photographer: Larry Campbell
Description: Photo facing southwest showing Dave Powers programming PC with the frequency of data recording for pressure transducers during LA pump test.

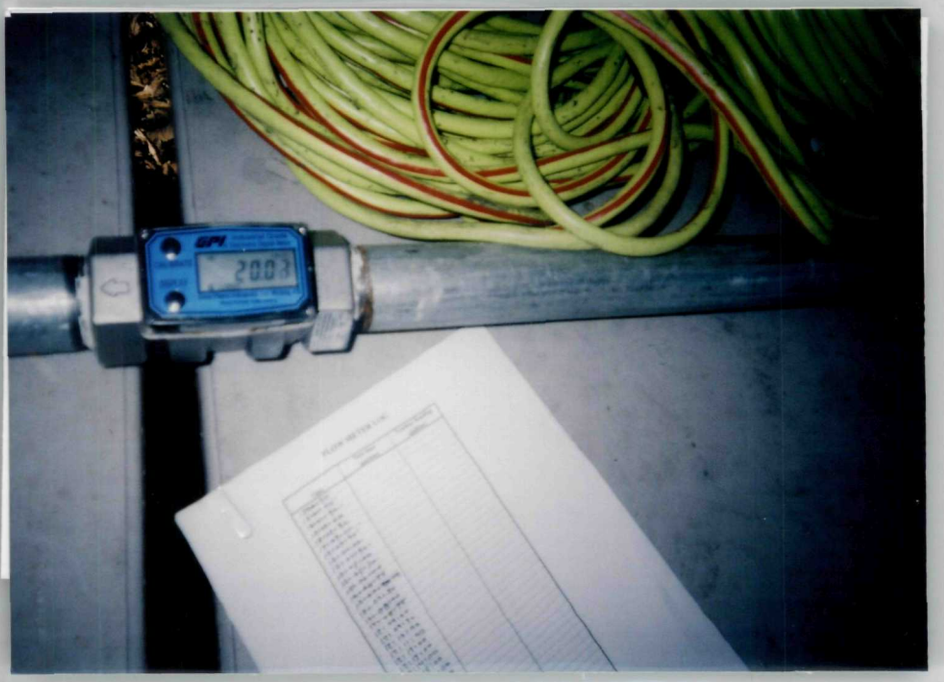
Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #16
Date: 11-01-05 Time: 1119
Photographer: Larry Campbell
Description: Photo facing northwest showing setup at EW02. Lee Orosz is conducting safety briefing for conduct of the pumping test.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #17
Date: 11-01-05 Time: 1200
Photographer: Larry Campbell
Description: Photo facing northeast showing Dave Powers turning on power to pump to start the long term lower aquifer pumping test. Note measuring water level in background.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #18
Date: 11-01-05 Time: 1201
Photographer: Larry Campbell
Description: Photo facing northwest showing Kevin Adler measuring water level at OW01.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #19
Date: 11-01-05 Time: 1205
Photographer: Larry Campbell
Description: Photo facing west showing Pete Vagt measuring water level at MW53.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #20
Date: 11-01-05 Time: 1206
Photographer: Larry Campbell
Description: Photo facing south showing Chad Smith measuring water level in EW02. Dave Powers is monitoring flow meter.



Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #21
Date: 11-01-05 Time: 1205
Photographer: Larry Campbell
Description: Photo facing down showing flow meter indicating 20.03 gpm flow from the pumping test.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #22
Date: 11-01-05 Time: 1215
Photographer: Larry Campbell
Description: Photo facing north showing Dave Powers checking conductivity of sampled water.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #23
Date: 11-01-05 Time: 1232
Photographer: Larry Campbell
Description: Photo facing east showing pump test setup. Staff is resting between water level readings.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #24
Date: 11-01-05 Time: 1300
Photographer: Larry Campbell
Description: Photo facing northwest showing Dave Powers collecting VOC samples from pump test discharge piping.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #25
Date: 11-01-05 Time: 1525
Photographer: Larry Campbell
Description: Photo facing west showing Lee Orosz installing new 150 psi pressure caps on ISVE well 51.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #26
Date: 11-01-05 Time: 1526
Photographer: Larry Campbell
Description: Photo facing west showing newly installed well cap.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 80 Photo #27
Date: 11-01-05 Time: 1530
Photographer: Larry Campbell
Description: Photo facing southeast showing MWH tightening new cap on ISVE 44.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #1
Date: 11-01-05 Time: 1600
Photographer: Larry Campbell
Description: Photo facing west showing Dave Powers taking hourly water level reading at MW53.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #2
Date: 11-01-05 Time: 1604
Photographer: Larry Campbell
Description: Photo facing north showing Dave Powers measuring water level in MW57.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #3
Date: 11-02-05 Time: 1000
Photographer: Chad Gailey
Description: Photo facing northeast showing MWH taking water level reading at EW02. Pumping at 20 gpm. Drawdown in EW02 is approximately 7 feet.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #4
Date: 11-02-05 Time: 1005
Photographer: Chad Gailey
Description: Photo facing east showing Chad Smith measuring groundwater parameters.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #5
Date: 11-02-05 Time: 1010
Photographer: Chad Gailey
Description: Photo facing southwest showing Chad Smith taking water level readings at LA15.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #6
Date: 11-02-05 Time: 1012
Photographer: Chad Gailey
Description: Photo did not develop.

Site: American Chemical Service, Inc.
Proj. #: 44728 AES *[46526 RAC]*
Roll: 81 Photo #7
Date: 11-02-05 Time: 1145
Photographer: Chad Gailey
Description: Photo facing north showing pump test area.